Designing for Area 51 - 'Skate Cam'

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DAAU20: Designing for vitality in a real-life setting

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ABSTRACT

AREA 51 is an indoor skatepark where athletes do sports and visitors watch. This place is renovated and ready to become a popular place. However, at this moment, the interaction between the visitors and the athletes is not there. So, this interaction needs to be enhanced by innovation. We, students from this course, took the opportunity to design something for this challenge. We designed 'Skate Cam', a camera which is controlled by the visitors and makes pictures of the athletes. The visitors can push a button and make photos of the athletes in action. By viewing these photos on screens in AREA 51, everyone can see the pictures. In this way, we hope to improve the interaction between visitors and athletes and the overall experience of AREA 51.

KEYWORDS

Area 51; indoor skatepark; athletes; visitors; interaction.

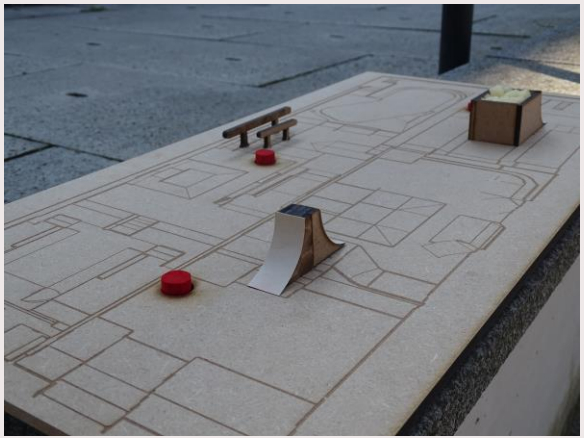


Figure 1: Final Design

INTRODUCTION

The popularity of urban sports has been rising. With BMX being an Olympic sport since 2008 [2] and more recently skateboarding debuting on the Olympics of 2021 [15]. For a new sport to attend the Olympics it has lots of rules and requirements to meet [6]. One of which, the sport needs to be popular. It needs to be popular on social media, such as YouTube and Instagram. It not only needs to be popular on social media, but the sport also needs to be practised by many youth around the world. That is why the IOC also looks at how many youth practise the sport worldwide [9].

So, for BMX riding and skateboarding attending the Olympics in these recent years, one can say the popularity of urban sports has been rising. With more youth practicing these different urban sports, such as BMX, skateboarding, scootering, rollerblading and free running.

With recent renovations, AREA 51 has become the biggest skatepark in Europe. Making it the place to be to practise all Urban Sports. There still is a lack of innovation. So, the challenge we needed to address was: *"How can the experience of the urban sports and their visitors be enhanced through innovation?" [3]* We rephrased this to, *''How can we enhance the interaction between athletes and visitors?''*

This challenge will be addressed throughout this paper. First related works will be discussed after which we introduce the challenge. Then the design process will be elaborated on, and the final design will be discussed. Subsequently user insights will be shared, concluding with reflections on the design, the acknowledgement of its limitations, and suggestions for addressing these limitations for further development.

RELATED WORKS

Urban sports parks, like Area 51, are different from other sports, leisure or fitness parks. The urban sports athletes often do not focus on competing against each other, but they find it important to have fun and demonstrate and improve their skills [7]. Since the athletes do not focus on competing, but more on improving their skills, one can consider ruling out competition-based technologies. On the other hand, one can argue for a technology that amplifies the athletes' style and skills. Allowing the athletes to reflect on their style and skills, to improve them.

According to Thorpe [11], social media platforms like Instagram, Snapchat and Twitter, are used by urban sporters to connect with other athletes and fans. They use the platforms to post pictures and videos. The platforms function in a way to show the athletes' improvement to its friends and fans. The platforms also allows viewers to look at the improvements of the athletes. Through those platforms athletes and fans/visitors can connect with each other and give feedback. The implementation of such platforms is something that will be considered throughout this design process, since we think it can function as an easy addition to a design.

Since we are focussing on enhancing the interaction between athletes and visitors, we looked into techniques on how to address attention to our design. This was done because we thought it was important to get the full attention of the visitors for our design. Therefore, we researched how we could make our design tempting for the visitors to use. The choice to make the buttons on the product red, was therefore a conscious choice, since people are tempted to press a red button. In multiple case studies, red buttons outperformed blue and green buttons [8].

THE CHALLENGE

Area51, Strijp-S Eindhoven

"How can the experience of the urban sports and their visitors be enhanced through innovation?"

Area51 is the biggest indoor skatepark in Europe and is home to the urban sport disciplines of skateboarding, BMX, scootering, rollerblading, breaking, and free running.
"The Urban Sports Performance Centre along with Area 51 are working towards transforming Eindhoven into the urban sports epicenter of the Netherlands.
Together they are aiming to support health, fitness, community engagement, and professional development for all urban athletes." [3]

Figure 2: AREA 51

BRAINSTORMING

After discussing the challenge, we visualized important parts of the design process, using the double diamond method. We asked ourselves some questions regarding the case. Such as what is the context of our case, to whom is this research important and who can help us answering these questions. Next, we investigated the stakeholders of our case and for whom we would be designing.

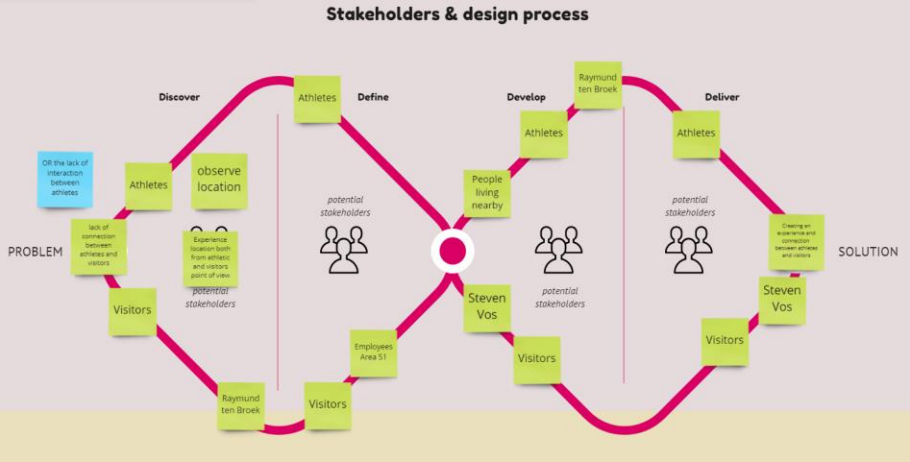


Figure 3: Double Diamond

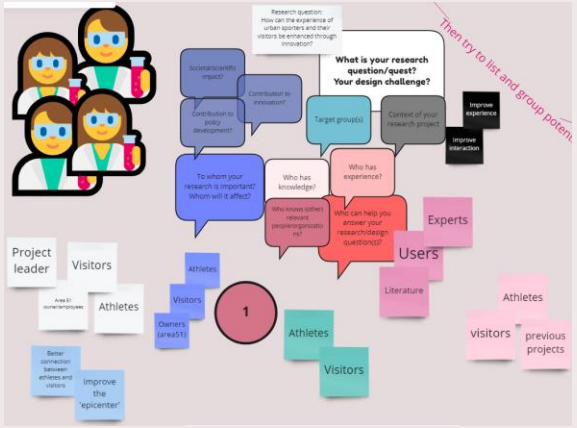


Figure 4: Questions and answers

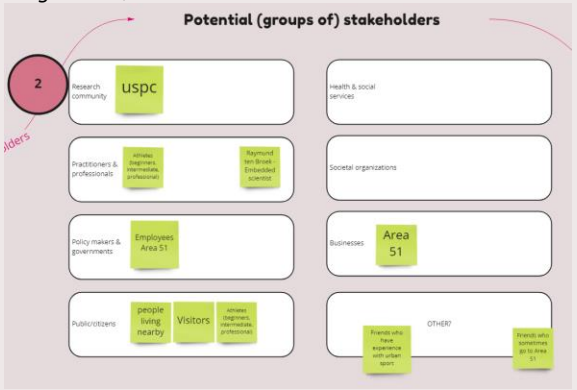


Figure 5: Stakeholders

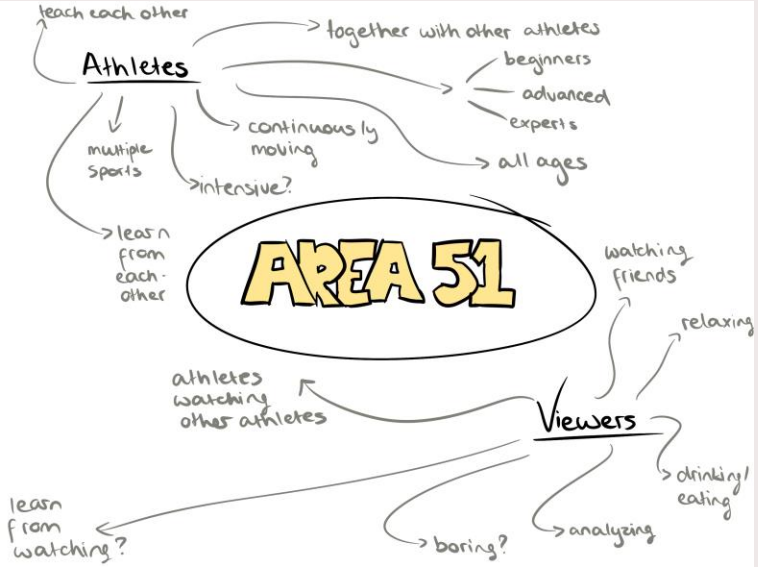


Figure 6: Brainstorm athletes and viewers

When we addressed all the questions, we investigated the stakeholders and how we wanted to tackle this challenge, we decided to focus more on the athletes and the viewers.

We focused on what kind of activities the athletes and viewers can do within AREA 51. The results of this brainstorm can be seen in the figure on the left.

The next step was to think of possible designs, 25 in total. We produced all the ideas and sketched them out. The results can be found in the next chapters.

25 IDEAS

SENSOR FOCUSSED IDEAS

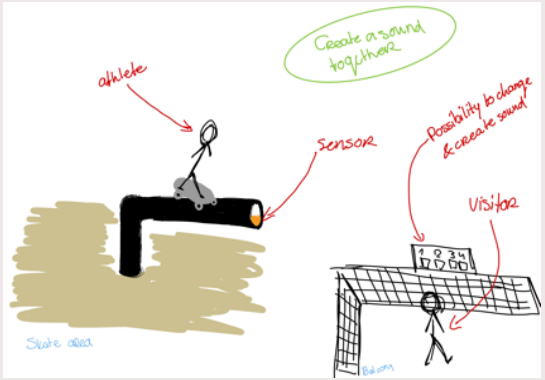


Figure 7: Sensor rail sound

There are multiple sensors in the park for the athletes. The visitor can choose to connect a sound to a sensor and create a sound together.

Figure 8: Sensor busyness [14]

Sensors in the park will recognize which places in the park are most popular. The visitors can see this and choose to focus on the most popular spot for example.

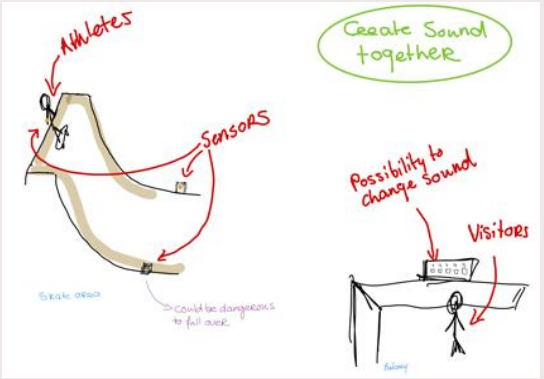


Figure 9: Sensor ramp sound

There are multiple sensors on different places in the park. Visitors can create a sound.

CAMERA FOCUSSED IDEAS

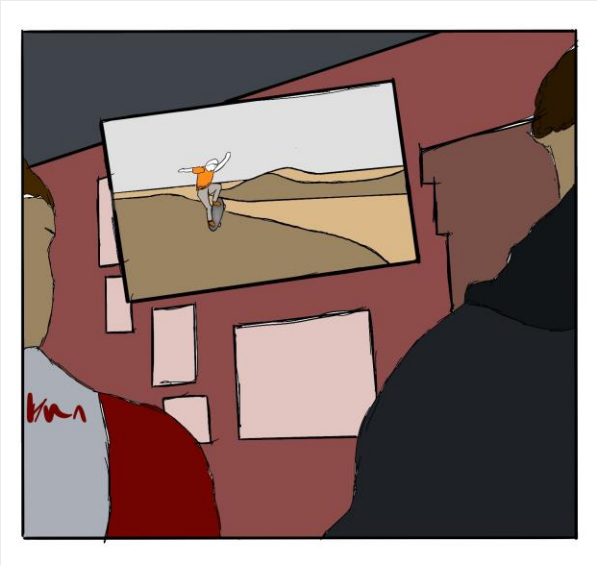


Figure 10: Bar screen

Photos or videos can be showed on screens at the bar for the visitors and athletes.

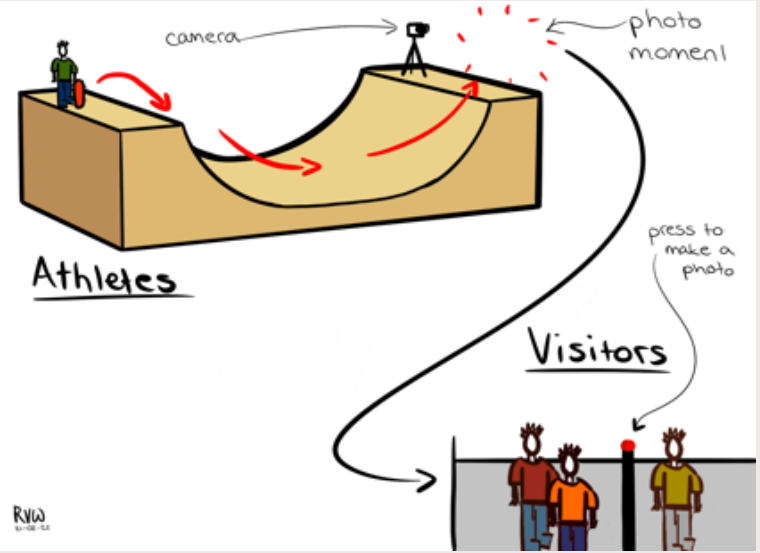


Figure 11: Photo button

Visitors can watch the athletes upstairs and decide when to take a photo. The camera is standing somewhere in the park.

TRICK FOCUSSED IDEAS

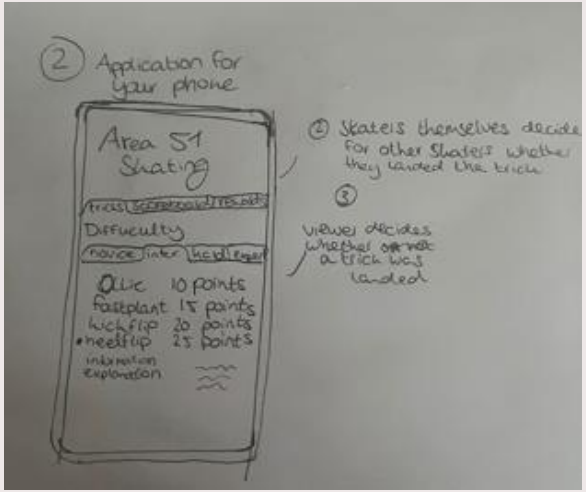


Figure 12: Trick generator app

This is a trick generator app for athletes. They can generate a trick and try to execute it.

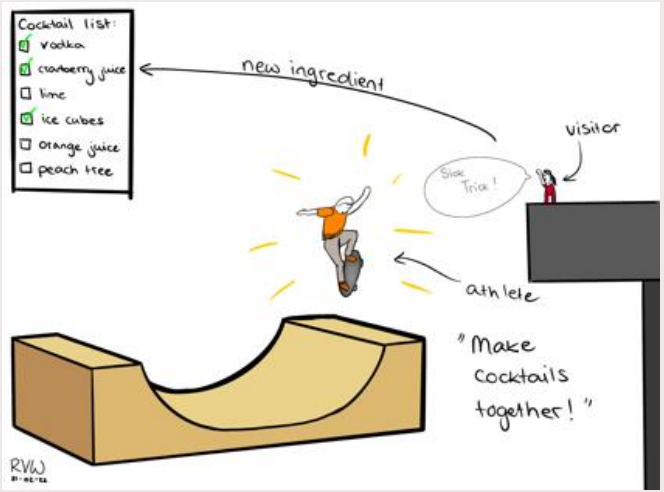


Figure 13: Cocktail maker

The visitor calls a trick, and the athlete can execute the trick. When the trick is executed, the athlete can add a new ingredient to the cocktail list.

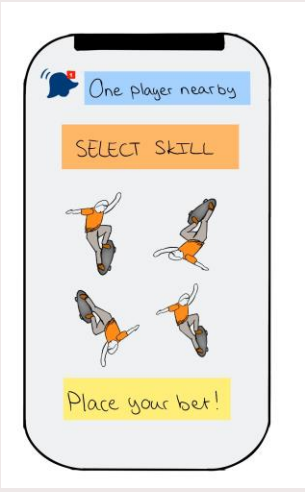


Figure 14: Trick generator app

Trick generator app for athletes to play with other athletes in the park.

ACTIVITIES FOR VISITORS IDEAS

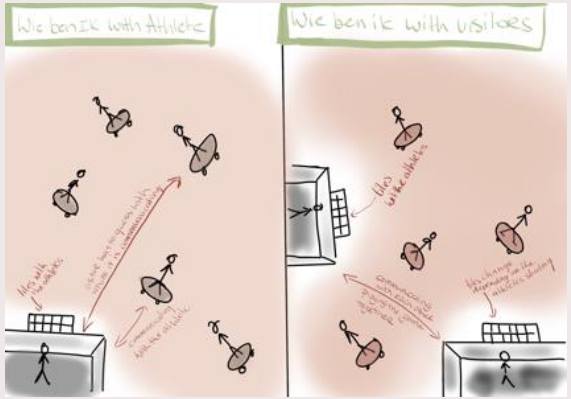


Figure 15: Who am I

Visitors play *'who am I?'* with athletes or against other visitors.

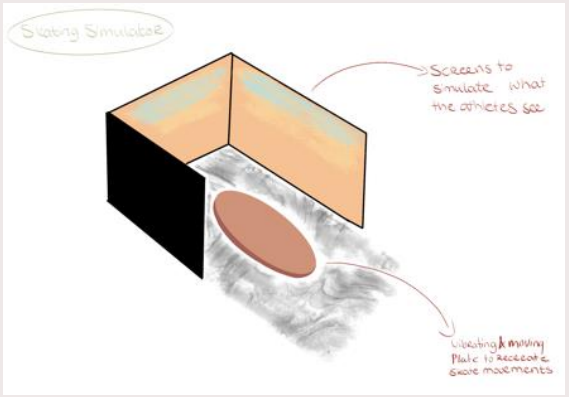


Figure 16: Skating simulator

A skating simulator where the visitor can experience the feeling of the skaters.

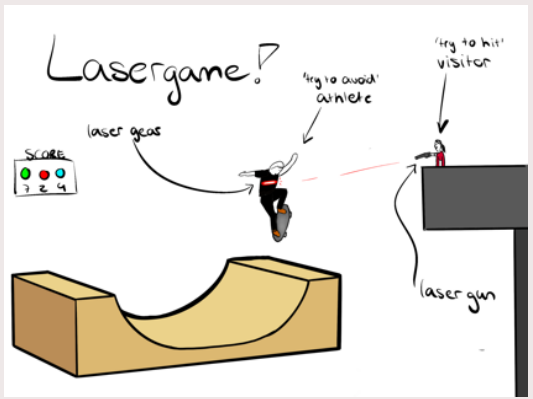


Figure 17: Lasergame

A laser game where the skaters are the targets for the visitors.

ACTIVITIES FOR VISITORS IDEAS

Figure 18: Paint sprayer

Paint sprayers which can be used by the visitors to brighten up the skatepark and the skaters.

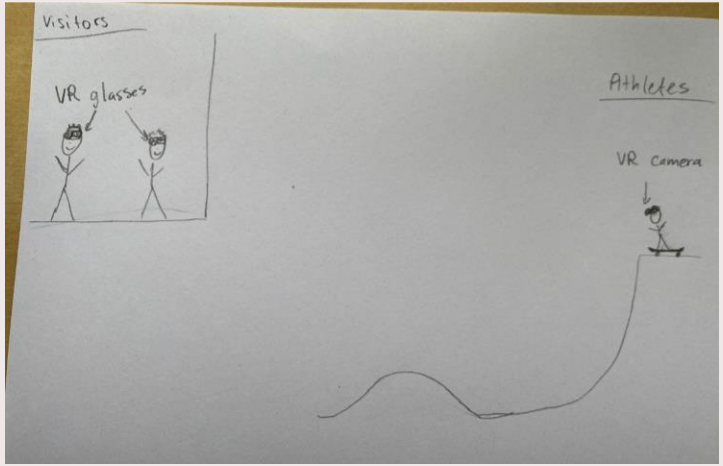


Figure 19: VR simulation

VR simulation, which shows the perspective of the skater to the visitor.

FEEDBACK FOCUSSED IDEAS

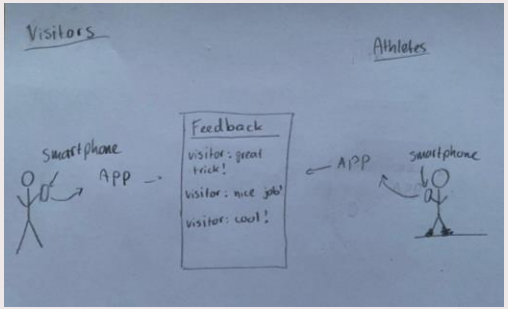


Figure 20: Feedback app

An application where visitors can give feedback to the skaters inside the park.

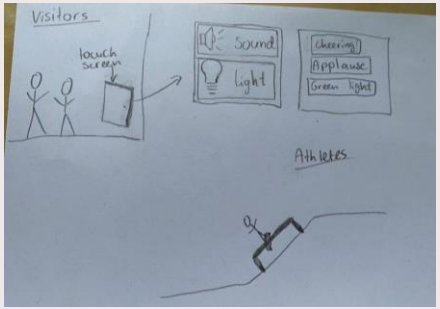


Figure 21: Feedback lights

A feedback system where visitors can give feedback through sounds and lights.

Figure 22: Feedback screens

A feedback system where the feedback from the visitors will be presented on screens. Visitors share their feedback through an interactive board in the visitors' section.

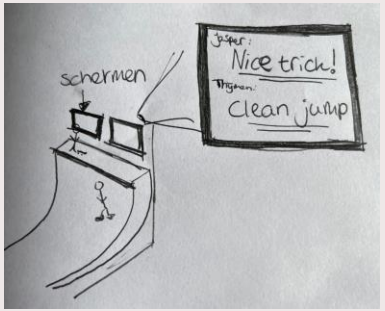


Figure 23: Feedback screens

A feedback system where the feedback from the visitors will be presented on screens. Visitors share their feedback through their phone.

OTHER IDEAS

Figure 24: Lunch [5]

Have lunch together with visitors and athletes every week, visitors arrange lunch for athletes.

Figure 25: Creative afternoon

A creative afternoon where visitors and skaters can express their artistic side by painting the park and skateboards.

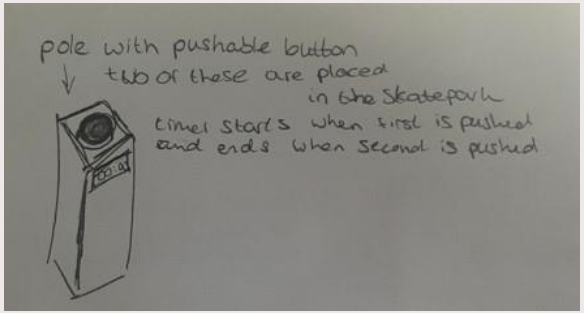


Figure 26: Speed challenge

A speed challenge where skaters try to traverse between the two buttons as fast as possible.

OTHER IDEAS

Figure 27: Disco themed night[10]

Disco themed evening in AREA 51.

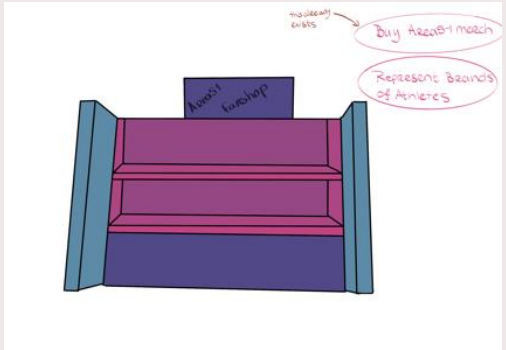


Figure 28: Fanshop

A fan shop where skaters can express their artistic vision.

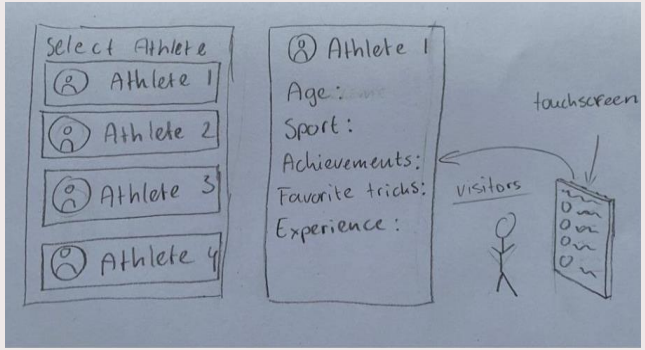


Figure 29: Social Media platform

A social media platform for the skaters where their statistics and profiles can be displayed.

FIELD RESEARCH

An important part of designing for a certain place is visiting the place and experiencing what the users need. We visited AREA 51 on a Thursday afternoon, but it was quite early, so it wasn't that busy. One thing that stood out was that there was a lot of noise, so ideas that were sound-based would be difficult to realize.

Figure 30: Field Trip AREA 51

We also noticed that most athletes did not focus on the visitors, but mostly on themselves. It seemed like the athletes and visitors did not seek more interaction, so our main goal shifted to improving the experience for athletes and visitors. Other things that stood out to us were that the area consists of several parts, younger children were exercising on their own and older children/adolescents were exercising in small groups.

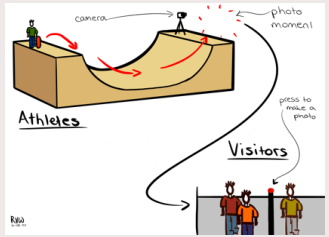
CHOOSING

To be able to choose our final idea we reviewed all our 25 ideas. We reviewed them on feasibility, benchmarked them and evaluated them based on our insights from our field trip to AREA 51. The idea of the paint sprayer (fig. 18) would not be very feasible in AREA 51, since it would lead to a big mess and dangerous situations for the athletes. The idea of the fan shop already existed, so it was also not chosen. After that we looked if we could combine ideas into one, since we also had some ideas that were very similar.

To narrow down our possibilities even further, a meeting took place with Raymund ten Broek, our contact person from AREA 51. In this meeting the challenge and ideas were discussed. We decided to focus more on improving the general experience of athletes and visitors. Raymund expressed his preference for a design innovation or product instead of an activity, but he did not rule out activities completely. He also advised us to talk with athletes and visitors and ask them what they need and what their opinion is on some of the ideas. Eventually, Raymund was quite enthusiastic about the photo idea, so the decision was made to focus on the camera centered ideas. He even raised some thoughts about how the idea could be improved in the future. In the end, we decided to combine the two camera ideas because it would make more sense and it was feasible (fig. 10 & 11).

THE CHOSEN IDEA

The pictures on this page show the chosen idea. There will be multiple cameras in AREA 51, which can be activated by pressing a button. Visitors can press this button and the picture will then be shown on a screen. The camera will make multiple pictures so that you do not have to time exactly. To point out which button belongs to which camera, a map of AREA 51 will be made.



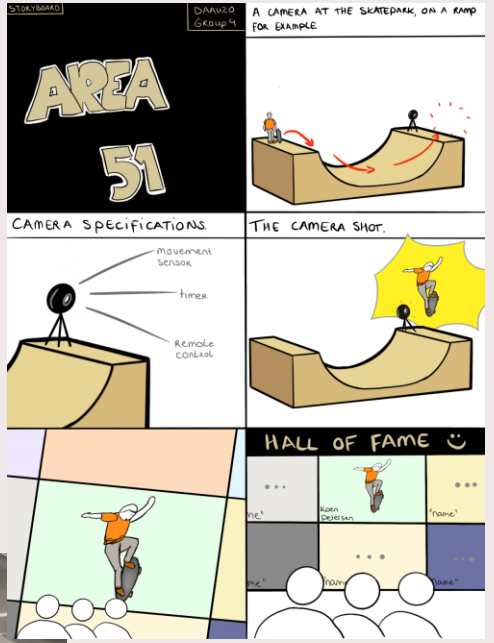
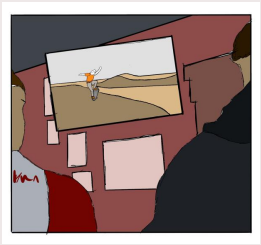
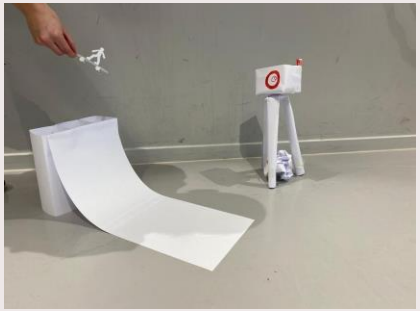


Figure 32: Storyboard





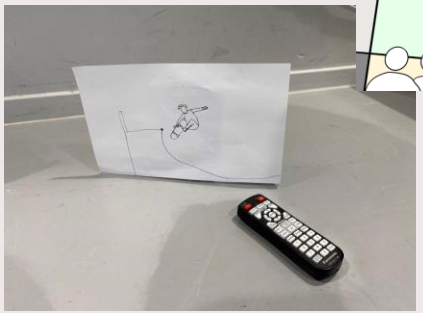


Figure 31: Paper prototype

THE MAIN FOCUS

Our idea consists of three components:

CAMERA

Figure 33: Camera used

In the prototype we used a Sony DSC-HX400V to take the pictures, however, there are cameras which are more suitable for taking sports pictures (e.g., Sony A9, Canon EOS M50 and Fujifilm XT-3) [4].

SCREEN

Figure 34: Ipad screen

Because it would be unhandy to carry a big screen, we used an iPad in the prototype. A bigger screen would be better, the only condition it must meet is that it can be connected to the camera via WIFI or Bluetooth.

A WAY OF ACTIVATION

Figure 35: Button activation

The camera will be activated via button that can be pressed. The button is connected to the camera via Bluetooth. In the prototype we connected them via a cable. This is a camera remote connected with a wire.

THE WAY OF ACTIVATION

The only component which could be differentiated was *the way of activation*. As for showing and taking the pictures we decided to simply use a screen and cameras. The choice which ones would be solely dependent on the budget. The cameras could be activated by the athletes themselves, the visitors or automated. However, it was not feasible to realise the activation for athletes and the automated activation. This could be a possible improvement if there would be more time and money. A more elaborate explanation on the automated activation and the activation by athletes can be found in the chapter 'discussion'. Also, in the prototype, only one of the three buttons worked. The reason for this was that we had to buy a remote for each button, while one working button would demonstrate the idea just fine.

ACTIVATION BY THE VISITOR

This would make the visit more exciting for the visitor as they can do more than just watching. An improvement in interaction between athlete and visitor can also happen.

Figure 36: User pressing a button

FINAL DESIGN - PROTOTYPING

First the map of AREA 51 was traced into an Adobe Illustrator document, so it could be laser cut. The map was engraved on 6-millimetre MDF. To show where exactly in the building the cameras are, holes will be made in the map using the laser cutter. On this map the places of the cameras are indicated, including a 3D visualization of the ramp or rails and a button to make the picture.

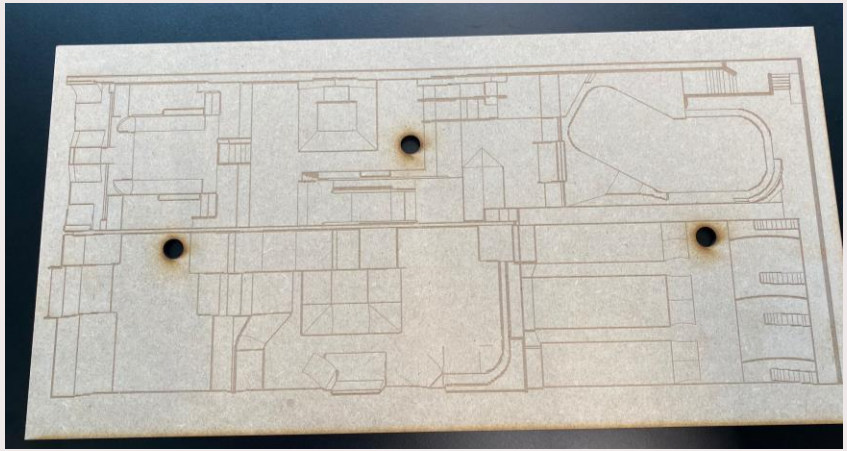


Figure 37: Laser cut map of AREA 51

Figure 38: Paws for the map

Each miniature obstacle is placed on its corresponding place, to make the map more recognizable. The buttons are colored red to increase notice of pressing the button. The choice to make the buttons on the product red, was a conscious choice, since people are tempted to press a red button. In multiple case studies, red buttons outperformed blue and green buttons [8].

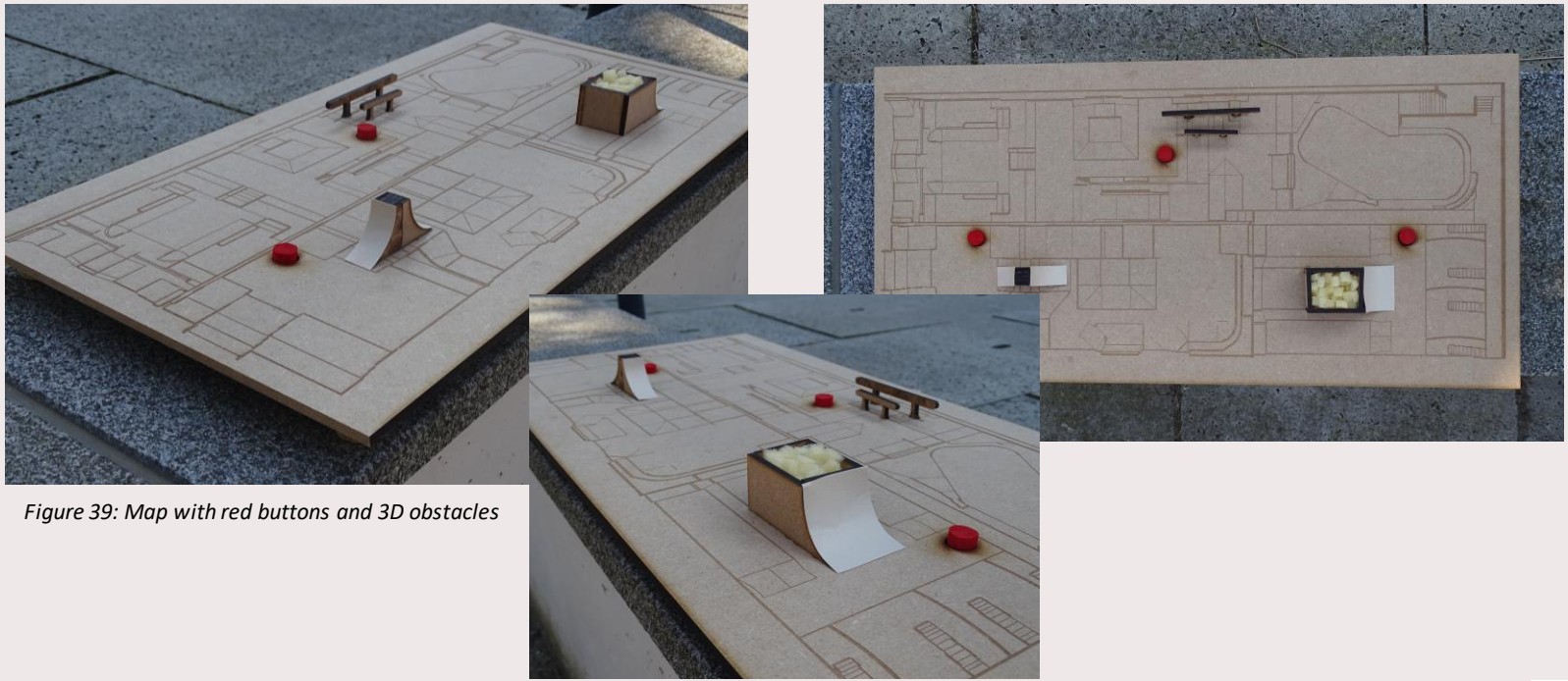


Figure 39: Map with red buttons and 3D obstacles

When the prototype was finished, we went to AREA 51 to put the prototype in the real setting to see how it looks, to film and to get some user feedback. It was chosen to set the prototype up in the way that visitors have a clear overview of the whole park. In the next chapters we will tell a bit about the filming experience and the user test we did.

Figure 40: The prototype in real-life setting

FILMING

EMPLOYEES INTERESTED

We came in and several employees immediately approached us and asked what it was that we were carrying in our hands. This was the prototype, and we explained how it worked. Everyone reacted enthusiastically but also curious as to how this would work.

ATHLETES INTERESTED

Also, when we asked to film some athletes doing their tricks, they asked us to forward them these videos. And while we were filming, some other athletes asked if we could make pictures when they were doing some tricks. This confirmed to us that there was a need from the athletes to get pictures and videos taken of them.

ATHLETES' KNOWLEDGE

However, the athletes who asked to make some pictures of them were really specific for the place of the camera. So, this was a learning point, because now we placed these cameras on the prototype ourselves. But it seems like the athletes may have the best knowledge to determine the placing of the cameras in the park AREA 51.

THE USER TEST

INTRODUCTION

For the user test, we went to AREA 51 on Thursday afternoon March 31. Raymund ten Broek has checked for us with AREA 51 what the busy times are, so we chose one of those times. On this day there were mostly athletes but not many visitors. This is not weird, since we are trying to design something for this problem. Also, Thursday evenings are the busiest, but unfortunately, we were not able to test at that time. We asked all the visitors who were there to test the prototype, which was 6 participants in total. The user tests took 5 to 10 minutes per user test and in total, we spent one and a half hours testing. The users existed of students who were watching their friends skating and parents who were watching their children participating in workshops.

SETTING UP

To figure out what we wanted to test exactly, we filled in some schematics to get a better overview.

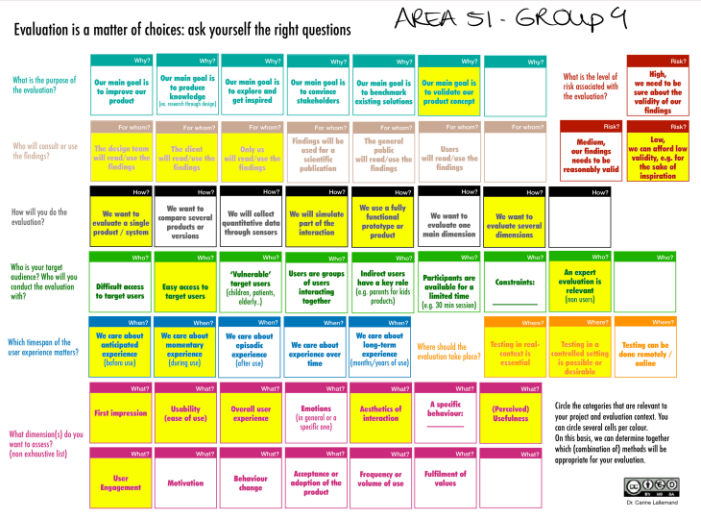


Figure 41: User evaluation [12]

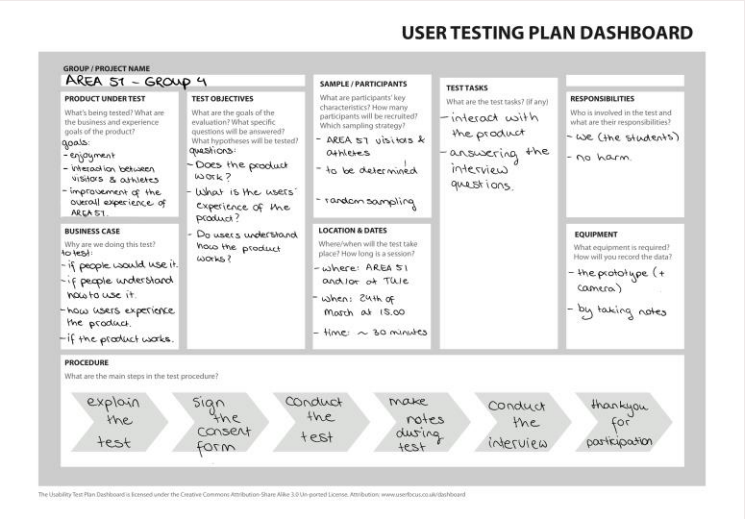


Figure 42: User testing [13]

FINAL SET UP USER TEST

First of all, the participants signed our consent form (Appendix B). After the consent form was signed, the user test was conducted. To 4 participants we just said, 'test the prototype' and we observed them while they were using the prototype. To the other 2 participants we explained our concept and then said, 'test the prototype' and we observed them. Both ways of testing ended with a short structured interview. With for example the question: *"Would you use the product yourself?"* And *"If you had to mention one point of improvement, what would it be?".*

Interview

Interview questions
What is the first word that comes to your mind after trying out the prototype?
What do you think of this prototype?
What do you think of the use of this prototype? Was it difficult or easy for example?
How did you feel while using the product? Which emotions?
What do you think of the interaction between the visitors and athletes in general?
What do you think this products' purpose is?
Do you think this product has influence on the interaction between athletes and visitors?
Would you use the product yourself?
If you had to mention one point of improvement, what would it be?
How would you describe this concept in one word?

Figure 43: Interview questions

USER TEST RESULTS

METHOD

All answers of the users are transcribed into a Word document separate (per participant). After this, all answers were collected and put under the question. To analyze the data, we categorized all the answers (and observations) in one of the following categories:

- Negative
- Positive
- Unclarity
- Improvements

Figure 44: Legend

ANALYSIS

Observations

Participant asks what the purpose of the prototype is and says: "Oh it is a map of the park". Participant presses button.

The participant says that half of the buttons is not working. The participant says he likes the prototype.

The participant feels the ramps and does not know which buttons work.

The participant says that it is a cool prototype. The button does not work and the participant does not know how much pressure is needed. The participant reacts surprised when the camera makes a photo, he likes the idea.

First impression, participant says: "Looks cool!"

The participant is just looking at it and not trying it out.

Questions

What is the first word that comes to your mind after trying out the prototype?

- Surprise
- Nice, but what can I do with it? Where can I see the pictures made? I do not know whether I would like to see the pictures again.
- Cool
- Nice, potential. I think users are going to pay more attention to what is happening, it is more interactive.
- Cool
- Nice

What do you think of this prototype?

- I think it's quite nice, I like the map.
- It looks nice
- Cool, good idea
- Nice
- It looks really nice.
- It looks nice, I think the red buttons really work for people to just go here and use it.

What do you think of the use of this prototype? Was it difficult or easy for example?

- It was not difficult, but I first needed to check how it works.
- No it was not difficult, but some buttons did not work.
- I did not know how to use it, it was not clear
- It was easy to use and it was clear, maybe a bit more explanation would be nice.
- It was not difficult, it was clear.
- Where are the cameras standing? Is it only a picture, no video? It is kinda funny, I would like to have such a photo.
-

How did you feel while using the product? Which emotions?

- Good
- It was nice to click the button, good button and good sound.
- Happy
- No emotion, it was interesting and nice.
- Fine.
- I did not use it.
-

What do you think of the interaction between the visitors and athletes in general?

- It is not good, there is almost no interaction.
- It is very bad
- Not that good, can be improved with this camera idea I think
- There is no interaction, everyone does their own thing and there is no connection.
- There is not much interaction, but I am here with my two kids and I think it is really nice to watch them.
- I think it is nice to see everything as a visitor, it is relaxed.

What do you think this products' purpose is?

- I think to make photos of the athletes.
- To make photos of athletes
- To improve the interaction between visitors and athletes
- Making photos and videos
- To make photos
- Making photos of the athletes

Do you think this product has influence on the interaction between athletes and visitors?

- Yes, I think it improves the interaction.
- No, I do think that this is a bad interaction. Because people will only look at a screen and not talk to each other. The focusing part of the camera is nice, good laser cut of the prototype.
- Yes
- I think it improves the interaction for visitors, but maybe not for the athletes.
- I think it improves, for me it would be really nice to have some overview when my two kids are skating.
- Yes, it would be really nice

Would you use the product yourself?

- Yes
- Yes, because of the red buttons.
- No I don't think so, because I would not know what this is.
- Yes I would defenitely try it out.
- Yes, if it is free. Because if it is free I would use it, but that needs to be mentioned somewhere.
- Yes, I would definitely use it.

If you had to mention one point of improvement, what would it be?

- I think that all buttons need to work.
- More dynamic, it is a bit stiff now.
- Make clear where to click to make a photo, maybe with a word.
- I do not know how you would see the photo. Is there 1 screen or for example 3? For every camera 1?
- No improvements
- Maybe some kind of text or explanation how to use this product: clear and short. But maybe without text it is also nice because people will just try it out.

How would you describe this concept in one word?

- Good
- Satisfying
- Exciting
- Innovative
- Beautiful
- Nice

Figure 45: Analysis user test

CONCLUSIONS

- Overall, there have been said a lot of positive things about the prototype in general, like: "Cool prototype", "Nice", "Good idea" and "I like the map".
- The usability had two sides, a positive one and one where unclarity was mentioned. The positive comments on the usability, such as: "Not difficult", "Easy to use" and "Nice to click the button". However, there was also some unclarity about the usability, which we saw in comments like: "Some buttons did not work", "What can I do with it?", "Where can I see the pictures made?", "Not clear" and "Don't know how to use it."
- Everyone knew what the products' purpose was.
- Almost everyone would use the product themselves, only one person not. Besides that, almost everyone thinks this product has influence on the interaction between athletes and visitors, only that same person as before not.
- The question: "How would you describe this concept in one word?" was answered with the following words: "Good", "Satisfying", "Exciting", "Innovative", "Beautiful" and "Nice".

IMPROVEMENTS CONCLUSIONS

The possible improvements, mentioned by participants, for the prototype are:

- All buttons need to work.
- More explanation is needed, for example by a clear and short text in front of the prototype how this works and where to click.
- More clarity about where the users can see the pictures. At this moment it was not clear for the users where to see the pictures, on one screen or multiple for example.
- Mention whether the use of this product is free or not.

DISCUSSION

PRIVACY

One issue that always arises when taking and showing pictures of people is the privacy issue. People have portrait rights, which means that in some cases a photographer needs permission to take and publish a picture of someone [1]. One way to solve this is by informing the visitors about the fact that photos will be taken and that by entering the building, they agree to the terms. The terms could include that the photos will only be shown on the screens in Area 51 and cannot be published and shared without permission.

THE PRODUCT IN REAL-LIFE

Because the sample size of the user tests was not that big, it remains to be seen whether people will also have a positive attitude towards the product in real-life. However, there will always be people who dislike the product. It is important to investigate if the benefits are greater than the costs.

FUTURE IMPROVEMENTS

Possible future improvements of the product could be to also place buttons available for the athletes and make use of automated activation. If athletes can make pictures themselves, it might improve the experience for them because they are not depended on the visitors or sensors. An automated activation would conclude in athletes having pictures to show and post, but this will not improve the interaction between athlete and visitor. Another feature that could be added is that of making videos.

During the test we noticed that parents were very interested in having and/or making photos of their children who are skating. We think that this could be very interesting for the business model of the product, since they are probably willing to pay for a photo of their children. Especially if they made it themselves.

Another future improvement is the placement of screens, for now we thought it could be somewhere in the bar. But maybe it is nice in the park itself on the wall, or at multiple places. There could be elaborated on this even more for the future.

Also, for this course we had a wire between the camera and the button. For the future, a wireless connection by Bluetooth or Wi-fi would be more realistic.

CONCLUSION

The prototype satisfied the goals that were set and when enough interest is accumulated could be expanded to a product which is implemented in AREA 51. The product is expected to improve the overall interaction between skater and visitor, and the experience of the skaters themselves. Social media is an important part of the daily life of people, and people like to share their experiences through photos via these mediums. The skaters who were photographed for the project expressed their happiness since they barely have any action photos to share. Skate Cam is the solution for this. It actively engages the visitors to capture the coolest moments and the tricks which normally can only be seen live, can now be shared with friends and family by gathering these pictures at the end of your exciting day at AREA 51.

While the product is only a prototype, there are some points to improve on. These improvements should be based on the wishes of the consumer. In our case the consumer would be the boss of AREA 51. These changes would be mainly based on how the product would be used.

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REFERENCES

[1] AUTEURSRECHT (2020). *AUTEURSRECHTNL > AUTEURSRECHT > PORTRETRECHT*. AUTEURSRECHT.NL. RETRIEVED 5 APRIL 2022, FROM HTTPS://WWW.AUTEURSRECHT.NL/AUTEURSRECHT/PORTRETRECHT

[2] *BMX*. (N.D.). KNWU. RETRIEVED ON 10 APRIL 2022, FROM HTTPS://WWW.KNWU.NL/BMX/INTRODUCTIE#:%7E:TEXT=SINDS%20DE%20OLYMPISCHE%20SPELEN%20VAN%20PEKING%202008%20IS%20BMX%20EEN%20OLYMPISCHE%20SPORT.

[3] CANVAS. (2022). *CASE – URBAN SPORTS EXPERIENCE @AREA51*.

[4] DIJKEMA, J. (13 JANUARY 2022). *BESTE CAMERA VOOR SPORTFOTOGRAFIE: ONAFHANKELIJK ADVIES.* KIJK & ZIE FOTOSCHOOL. RETRIEVED 5 APRIL 2022, FROM HTTPS://KIJKENZIEFOTOSCHOOL.NL/BESTE-CAMERA-SPORTFOTOGRAFIE/

[5] FAMILY AND FRIENDS HAVING LUNCH TOGETHER. (N.D.). [PHOTOGRAPH]. STOCKSY. HTTPS://WWW.STOCKSY.COM/1709654/FAMILY-AND-FRIENDS-HAVING-LUNCH-TOGETHER

[6] IOC. (JUNE, 2012). *EVALUATION CRITERIA FOR SPORTS AND DISCIPLINES - 2012*. INTERNATIONAL OLYMPIC COMMITTEE.

[7] KILBERTH, V. (2021). *THE URBAN SPORTS PARK CONCEPT – HOW TO TURN NICHE SPORTS INTO SOMETHING THAT ATTRACTS A WIDE RANGE OF USERS*. THE URBAN SPORTS PARK CONCEPT – HOW TO TURN NICHE SPORTS INTO SOMETHING THAT ATTRACTS A WIDE RANGE OF USERS. RETRIEVED 9 APRIL 2022, FROM HTTPS://PLAYGROUND-LANDSCAPE.COM/EN/ARTICLE/2506-THE-URBAN-SPORTS-PARK-CONCEPT-HOW-TO-TURN-NICHE-SPORTS-INTO-SOMETHING-THAT-ATTRACTS-A-WIDE-RANGE-OF-USERS.HTML

[8] NIGGULIS, O. (2022, JANUARY 20). *WHICH BUTTON COLOR CONVERTS THE BEST?* CXL. RETRIEVED 8 APRIL 2022, FROM HTTPS://CXL.COM/BLOG/WHICH-COLOR-CONVERTS-THE-BEST/

[9] NOS. (21 JULY 2022). *WIE BEPAALT WELKE SPORT OLYMPISCH IS?* NOS STORIES. RETRIEVED ON 10 APRIL 2022, FROM HTTPS://STORIES.NOS.NL/ARTIKEL/2390237-WIE-BEPAALT-WELKE-SPORT-OLYMPISCH-IS

[10] ROLLER PLANET. (N.D.). [PHOTOGRAPH]. ROLLER PLANET. HTTPS://WWW.ROLLERPLANET.NL/ROLSCHAATSEN-UTRECHT/

[11] THORPE, H. (2016). ACTION SPORTS, SOCIAL MEDIA, AND NEW TECHNOLOGIES. *COMMUNICATION & SPORT*, *5*(5), 554–578. HTTPS://DOI.ORG/10.1177/2167479516638125

[12] USER EVALUATION DIAGNOSES ACTIVITY. (N.D.). [SCHEMATIC]. CANVAS. HTTPS://CANVAS.TUE.NL/COURSES/18712/FILES/3899442?MODULE_ITEM_ID=365003

[13] USER TESTING PLAN DASHBOARD. (N.D.). [SCHEMATIC]. CANVAS. HTTPS://CANVAS.TUE.NL/COURSES/18712/FILES/3899441?MODULE_ITEM_ID=365004

[14] WIJNHOVEN, S. (2021, DECEMBER 15). DE VOLLEDIG VERBOUWDE HAL VAN AREA 51. [PHOTOGRAPH]. EINDHOVENS DAGBLAD. HTTPS://WWW.ED.NL/EINDHOVEN/AREA-51-IS-GEEN-SKATEPARK-MEER-MAAR-EEN-URBAN-PARK-VOOR-EEN-BREDER-PUBLIEK~A61F377E/

[15] WIKIPEDIA-BIJDRAGERS. (2021, 31 JULY). *SKATEBOARDEN OP DE OLYMPISCHE ZOMERSPELEN*. WIKIPEDIA. RETRIEVED ON 10 APRIL 2022, FROM HTTPS://NL.WIKIPEDIA.ORG/WIKI/SKATEBOARDEN_OP_DE_OLYMPISCHE_ZOMERSPELEN

APPENDIX

APPENDIX A VIDEO

https://youtu.be/-MsOc09Wwt0

APPENDIX B CONSENT FORM

https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:a68744f8-a3bf-3190-a11b-d145d0d6f7c5